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(last published issue)

CONTENTS

PREFACE

The <u>SEA-FR Management Review</u> is a joint effort of the Information Staff and Personnel Division of the Science and Education Administration, U.S. Department of Agriculture. The purpose of the <u>SEA-FR Management Review</u> is to aid executives and potential executives in their development of skills, knowledges and abilities that will result in more effective management.

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1978

November 13-15 <u>Operations Research Society of America (ORSA)</u>/
<u>The Institute of Management Sciences (TIMS)</u>
Joint National Meeting, Los Angeles, CA, Los
Angeles Bonaventure.

Content: "OR/MS: Evaluation, Revolution or
Dissolution?" Includes sessions on information
systems, water resource management, modeling
consumer behavior, career problems of engineers
and scientists, managerial decision making and
analysis, project management, energy, the manage-
ment and his client/boss, production planning,
manpower planning, R&D studies, etc. Contact
(401) 274-2525.

November 13-17 <u>AR Workshop for New Executives</u>, Silver Spring
MD., Leadership Systems Inc.

Content: Workshop is designed for new executives
and research leaders who were nominated and
selected by their Regional Deputy Administrators.
There will be a formal presentation and briefing
with Mr. Edminster on the evening of November 16.
Contact Dick Fraser (301) 436-8123 for further
information.

November 16-17 Annual Convention, <u>National Academy of Public</u>
<u>Administration</u>, Washington, D.C.

Content: To be announced. For members only.
Contact (202) 659-9165.

November 30- Regional Conference, <u>American Society for Public</u>
December 1 <u>Administration</u>, Washington, D.C., Capital Hilton
Hotel.

Content: To be announced. Contact (202) 786-3255.

December 2-6 <u>American Institute of Industrial Engineers, 1978</u>
Fall Industrial Engineering Conference, Atlanta, GA,
Atlanta Hilton Hotel.

Content: Maintenance management, value analysis,
productivity improvement for profit, energy con-
servation management programs.

1979

January 7 <u>American Association for the Advancement of Science</u>
Council Meeting, Houston, TX, Shamrock Hilton Hotel.

Content: To be announced. Contact (202) 467-4485.

February 8-9   American Society for Public Administration
                    San Francisco, CA, Holiday Inn Golden Gateway.

                    Content: To be announced. Contact (202) 785-3255.

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                    EDMINSTER'S TRAVEL SCHEDULE

November 1   Phytopathological Society meeting in Tucson, Arizona

November 2-3   Western Area Director's Meeting in Phoenix, Arizona

November 13-14   Land Grant College meetings in St. Louis, Missouri (tentative)

December 5-6   American Society of Agronomy meetings in Chicago, Illinois

December 14-15   Meeting in Ottawa with representatives of the Canadian and
                    British Departments of Agriculture

December 19-20   American Society of Agricultural Engineers, Chicago, Illinois

Legislative Report

Much has happened since the last issue of the Management Review.
Don Ladd is now Assistant to the Director of SEA, and Kathy Tollerton,
recently appointed Confidential Assistant to the Director of SEA, is
in charge of the Legislative Staff. Congress has cleared and the
President has signed into law several pieces of legislation of inter-
est to the Science and Education Administration. Bills were passed
and signed to rename the Meat Animal Research Center for Senator
Roman Hruska, the Brownwood Pecan Field Station for Congressman
Poage, and the Tucson Bee Laboratory for the late Senator Carl Hayden.
Additionally, there were two bills enacted that were part of our
legislative program. One of these authorized the Secretary to re-
linquish exclusive legislative jurisdiction over lands or interests
under his control. The other was an amendment to the Farm Bill to
correct a funding formula for allocating funds to 1890 institutions.
Probably the most discussed bill to come out of this Congress, at
least for most civil servants, is the Civil Service Reform Act.
Among other things, this legislation abolishes the Civil Service
Commission and creates a Senior Executive Service for grades GS 16-18.
The Congress, as most of you are aware, completed and sent to the
President the 1979 Agriculture Appropriation Bill, which President
Carter signed into law.

In the last issue of the Management Review, we included a copy of a
new report that the Legislative Staff uses to follow pending legisla-
tion. We asked for your comments on legislation you would like us to
track. We are again including our report so that you may note the
final action taken on several bills we have followed during the past
few months.

                                        Patrick J. Casula
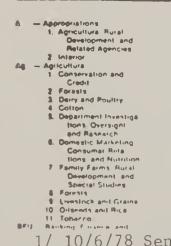   Legislative Analyst

STATUS OF LEGISLATION
SCIENCE AND EDUCATION ADMINISTRATION
AS OF OCTOBER 12, 1978

× Scheduled
√ In Process
● Completed

KEY ISSUES	HR Bill No.	Committee	Sub-Committee	Hearings	Reported	Debate	Rejected	Passed	Department Report	S Bill No.	Committee	Sub-Committee	Hearings	Reported	Debate	Rejected	Passed	Department Report	Final Action
APPROPRIATIONS																			
AGRICULTURE 1979	13125	A	1	●	●	●		●			A	1	●	●	●		●		P.L. 95-448
INTERIOR 1979	12932	A	2	●	●	●		●			A	2	●	●	●		●		
FOREIGN ASSISTANCE 1979	12931	A		●	●	●		●			A		●	●	●		●		
LEGISLATIVE PROGRAM																			
EXCLUSIVE (Ag 951-72) JURISDICTION	13348	Ag	5	●	●				SEA ●	2946	Ag		●	●			●	SEA ●	P.L. 95-441
VOLUNTEER (Ag 951-73) SERVICES																			
SCIENTIST (Ag 951-124) PROTECTION																			
FARM BILL (Ag 952-49) AMENDMENT	13989	Ag	5		●			●	SEA ●	3380	Ag	4		1/			●	SEA ●	
(1890 Amendment)																			
MISCELLANEOUS																			
MATERIALS POLICY	10859	S	2	●															
RECOMBINANT DNA	11192	IFC/S		●	●				SEA √										
GUAYULE RESEARCH	5720 12559	S/Ag	2/5	●	● /			●	SEA ●										
GUAYULE RESEARCH										1816	C		●	●	●		●	SEA	
PATENT POLICY	8596 6249								SEA ●										
RENAME CLAY CENTER	6358	Ag	5	●	●			●	SEA ●	409	Ag			●			●	SEA ●	P.L. 95-436
RENEWABLE RESOURCES RESEARCH	11778	Ag	5		●	●		●	FS ●	3034	Ag			●	●		●	FS ●	P.L. 95-307

1/ 10/6/78 Senate Agriculture Committee approved presenting H.R. 13989 to the Senate for vote.

SCIENCE AND EDUCATION ADMINISTRATION
AS OF OCTOBER 12, 1978

Scheduled
✓ In Process
● Completed

KEY ISSUES	HOUSE									SENATE									Final Action
	HR Bill No.	Committee	Sub-Committee	Hearings	Reported	Debate	Rejected	Passed	Department Report	S Bill No.	Committee	Sub-Committee	Hearings	Reported	Debate	Rejected	Passed	Department Report	
MISCELLANEOUS																			
RENEWABLE RESOURCES EXTENSION	11779	Ag	5		●	●		●	SEA ●	3035	Ag			●	●		●	SEA ●	P.L. 95-306
WATER RESOURCES RESEARCH CTRS.	12023	INT	3							2826	EPW								
RENAME BEE LAB., TUCSON	7432	Ag	5	●	●			●	SEA ●	3274	Ag			●			●	SEA ●	P.L. 95-446
RENAME PECAN STA., BROWNWOOD	11123	Ag	5	●	●			●	SEA ●										
RENAME BROWNWOOD AND CLAY CTR., NEB.										3467	Ag			●			●		P.L. 95-451

An Interview With Dr. Terry Kinney

Management Review: What are some of the more critical issues and priorities facing Agricultural Research right now?

Terry B. Kinney: Well, the ones that come to mind immediately are funding and personnel slots. Another issue that is extremely important is our increasing attention to applied problems. These are problems that are looking for solutions right now. As a result of this, I think we have let our basic research slip. Our future in agricultural research is directly proportionate to the amount of basic research that we have in the "bank." One last point I think is important--we have not kept an influx of young scientists coming into the organization. The average age of our scientists is increasing every year. This, to me, is a very serious problem.

M.R.: What message do you have for scientists in the regions as you assume your new role?

T.B.K.: I want all to know that I have a very profound respect for research scientists. I was one myself. I'm sure I wasn't one of the best, but I thought I was pretty good and I was very proud of the organization. I still have that same feeling. If I didn't, I would have left the organization years ago. But I feel very strongly that our scientists in AR are doing an out- standing job in serving the public, and they are recognized throughout the world for their excellence. I am going to do everything I can in this position to continue to support them.

M.R.: Can you describe your personal attitude as you moved from the area of research toward assuming greater responsibility as an administrator?

T.B.K.: The reaction of anyone moving from research to administration initially is rather traumatic. Even though you might be conditioned by having been a research leader and having some management role, it's rather a traumatic experience. I have found that I've had to stop thinking like a research scientist and start thinking like an administrator who is there to help the research scientist. I've had to be satisfied with an understanding of the research and not in-depth knowledge. There is no way that an adminis- trator can keep up with any single scientific field--let alone the number that he manages. So, I guess the difficulty has been in "letting go" and still maintaining a knowledge of the research so that I can communicate with and understand the scientists.

M.R.: What can a research administrator do to help develop creative and produc- tive scientists?

T.B.K.: Perhaps the most important thing that he or she can do is to stay out of the scientist's way as much as possible--and very quietly create a challenging atmosphere for that scientist. If you have a truly creative individual, that person wants to be challenged. And once he or she arrives at an answer, then a new challenge is needed. So, I think it is a matter of

not trying to lead or manage, but to understand and to do everything possible to help. Now we have a good many creative scientists in our organization, and I think that the ones that have been most creative are the ones that have been managed the least and helped the most.

M.R.: Do you have a plan to improve the cooperation between Agricultural Research and the other units within SEA?

T.B.K.: Right now we are in a mode where the most important thing we can do is to listen. Listening is important, because if we are going to cooperate then we must understand each other. We must understand the total SEA organization. It is important that we cooperate very closely, otherwise the organization will be a failure. We need to listen now, and act as soon as we understand and it is appropriate to act.

M.R.: Would you describe your personal philosophy on the management of research?

T.B.K.: Let me answer that by describing what I found when I first went into administrative work. I found that I still wanted to be affiliated with research, and I found myself suggesting all kinds of brilliant ideas to scientists who were still at the bench--and found them politely ignoring me. It took a while to realize that one cannot continue, that research and administration are two separate entities. The researcher needs to have as much freedom as possible, and the administrator needs to keep as many distractions away from the researcher as possible. I believe that one should not be in administration unless one can find personal satisfaction from making something happen in the organization. I think that a scientist can go home at the end of the day and recognize that he or she made some progress towards achieving a goal. I think an administrator might go home and realize that through his or her efforts it was possible to get an additional $50,000 to support that researcher.

M.R.: Do you have any advice for those aspiring to a management career?

T.B.K.: Yes, I think I would sum it up this way. A number of years ago, before I took my first management position back in 1969, an administrator visited with me and asked me these questions: "Are you willing to leave the bench and take on some responsibilities that will not directly relate to the bench? Can you get your satisfaction from something other than actual research or seeing your name on a publication? If those things are important to you, you better stay at the bench. Otherwise, you have a chance to be a good administrator." But, I think you really don't know until you get in there and try. I think if a person gets to the point where he's in over his head--whether he is a researcher or an administrator-- he needs to have courage enough to back up and ask, "Am I in the wrong stall?"

The manager's job: folklore and fact

Henry Mintzberg

The classical view says that the manager organizes, coordinates, plans, and controls; the facts suggest otherwise

Just what does the manager do? For years the manager, the heart of the organization, has been assumed to be like an orchestra leader, controlling the various parts of his organization with the ease and precision of a Seiji Ozawa. However, when one looks at the few studies that have been done—covering managerial positions from the president of the United States to street gang leaders—the facts show that managers are not reflective, regulated workers, informed by their massive MIS systems, scientific, and professional. The evidence suggests that they play a complex, intertwined combination of interpersonal, informational, and decisional roles. The author's message is that if managers want to be more effective, they must recognize what their job really is and then use the resources at hand to support rather than hamper their own

nature. Understanding their jobs as well as understanding themselves takes both introspection and objectivity on the managers' part. At the end of the article the author includes a set of self-study questions to help provide that insight.

Mr. Mintzberg is associate professor in the Faculty of Management at McGill University, Montreal, Canada. He is currently a visiting professor at Centre d'étude et de Recherche sur les organisations et la gestion (I.A.E.) in Aix-en-Provence, France. Some of the material in this article is condensed from the author's book *The Nature of Managerial Work*, published by Harper & Row.

If you ask a manager what he does, he will most likely tell you that he plans, organizes, coordinates, and controls. Then watch what he does. Don't be surprised if you can't relate what you see to these four words.

When he is called and told that one of his factories has just burned down, and he advises the caller to see whether temporary arrangements can be made to supply customers through a foreign subsidiary, is he planning, organizing, coordinating, or controlling? How about when he presents a gold watch to a retiring employee? Or when he attends a conference to meet people in the trade? Or on returning from that conference, when he tells one of his employees about an interesting product idea he picked up there?

The fact is that these four words, which have dominated management vocabulary since the French industrialist Henri Fayol first introduced them in 1916, tell us little about what managers actually do. At best, they indicate some vague objectives managers have when they work.

The field of management, so devoted to progress and change, has for more than half a century not seriously addressed *the* basic question: What do managers do? Without a proper answer, how can we teach management? How can we design planning or information systems for managers? How can we improve the practice of management at all?

Our ignorance of the nature of managerial work shows up in various ways in the modern organization—in the boast by the successful manager that he never spent a single day in a management training program; in the turnover of corporate planners who never quite understood what it was the manager wanted; in the computer consoles gathering dust in the back room because the managers never used the fancy on-line MIS some analyst thought they needed. Perhaps most important, our ignorance shows up in the inability of our large public organizations to come to grips with some of their most serious policy problems.

Somehow, in the rush to automate production, to use management science in the functional areas of marketing and finance, and to apply the skills of the behavioral scientist to the problem of worker motivation, the manager—that person in charge of the organization or one of its subunits—has been forgotten.

My intention in this article is simple: to break the reader away from Fayol's words and introduce him to a more supportable, and what I believe to be a more useful, description of managerial work. This description derives from my review and synthesis of the available research on how various managers have spent their time.

In some studies, managers were observed intensively ("shadowed" is the term some of them used); in a number of others, they kept detailed diaries of their activities; in a few studies, their records were analyzed. All kinds of managers were studied—foremen, factory supervisors, staff managers, field sales managers, hospital administrators, presidents of companies and nations, and even street gang leaders. These "managers" worked in the United States, Canada, Sweden, and Great Britain. ...

A synthesis of these findings paints an interesting picture, one as different from Fayol's classical view as a cubist abstract is from a Renaissance painting. In a sense, this picture will be obvious to anyone who has ever spent a day in a manager's office, either in front of the desk or behind it. Yet, at the same time, this picture may turn out to be revolutionary, in that it throws into doubt so much of the folklore that we have accepted about the manager's work.

I first discuss some of this folklore and contrast it with some of the discoveries of systematic research—the hard facts about how managers spend their time. Then I synthesize these research findings in a description of ten roles that seem to describe the essential content of all managers' jobs. In a concluding section, I discuss a number of implications of this synthesis for those trying to achieve more effective management, both in classrooms and in the business world.

Some folklore and facts about managerial work

There are four myths about the manager's job that do not bear up under careful scrutiny of the facts.

1
Folklore: The manager is a reflective, systematic planner. The evidence on this issue is overwhelming, but not a shred of it supports this statement.

Fact: Study after study has shown that managers work at an unrelenting pace, that their activities are characterized by brevity, variety, and discontinuity, and that they are strongly oriented to action and dislike reflective activities. ....

The manager is simply responding to the pressures of his job. I found that my chief executives terminated many of their own activities, often leaving meetings before the end, and interrupted their desk work to call in subordinates. One president not only placed his desk so that he could look down a long hallway but also left his door open when he was alone—an invitation for subordinates to come in and interrupt him.

Clearly, these managers wanted to encourage the flow of current information. But more significantly, they seemed to be conditioned by their own work loads. They appreciated the opportunity cost of their own time, and they were continually aware of their ever-present obligations—mail to be answered, callers to attend to, and so on. It seems that no matter what he is doing, the manager is plagued by the possibilities of what he might do and what he must do.

When the manager must plan, he seems to do so implicitly in the context of daily actions, not in some abstract process reserved for two weeks in the organization's mountain retreat. The plans of the chief executives I studied seemed to exist only in their heads—as flexible, but often specific, intentions. The traditional literature notwithstanding, the job of managing does not breed reflective planners; the manager is a real-time responder to stimuli, an individual who is conditioned by his job to prefer live to delayed action.

2
Folklore: The effective manager has no regular duties to perform. Managers are constantly being told to spend more time planning and delegating, and less time seeing customers and engaging in negotiations. These are not, after all, the true tasks of the manager. To use the popular analogy, the good manager, like the good conductor, carefully orchestrates everything in advance, then sits back to enjoy the fruits of his labor, responding occasionally to an unforeseeable exception.

But here again the pleasant abstraction just does not seem to hold up. We had better take a closer look at those activities managers feel compelled to engage in before we arbitrarily define them away.

Fact: In addition to handling exceptions, managerial work involves performing a number of regular duties, including ritual and ceremony, negotiations, and processing of soft information that links the organization with its environment.

3
Folklore: The senior manager needs aggregated information, which a formal management information system best provides. Not too long ago, the words *total information system* were everywhere in the management literature. In keeping with the classical view of the manager as that individual perched on the apex of a regulated, hierarchical system, the literature's manager was to receive all his important information from a giant, comprehensive MIS.

But lately, as it has become increasingly evident that these giant MIS systems are not working—that managers are simply not using them—the enthusiasm has waned. A look at how managers actually process information makes the reason quite clear. Managers have five media at their command—documents, telephone calls, scheduled and unscheduled meetings, and observational tours.

Fact: Managers strongly favor the verbal media— namely, telephone calls and meetings. The evidence comes from every single study of managerial work.

An analysis of the mail the executives received reveals an interesting picture—only 13% was of specific and immediate use. So now we have another piece in the puzzle: not much of the mail provides live, current information—the action of a competitor, the mood of a government legislator, or the rating of last night's television show. Yet this is the information that drove the managers, interrupting their meetings and rescheduling their workdays.

Consider another interesting finding. Managers seem to cherish "soft" information, especially gossip, hearsay, and speculation. Why? The reason is its timeliness; today's gossip may be tomorrow's fact. The manager who is not accessible for the telephone call informing him that his biggest customer was seen golfing with his main competitor may read about a dramatic drop in sales in the next quarterly report. But then it's too late.

To assess the value of historical, aggregated, "hard" MIS information, consider two of the manager's prime uses for his information—to identify problems and opportunities [8] and to build his own mental models of the things around him (e.g., how his organization's budget system works, how his customers buy his product, how changes in the economy affect his organization, and so on). Every bit of evidence suggests that the manager identifies decision situations and builds models not with the aggregated abstractions an MIS provides, but with specific tidbits of data.

The manager's emphasis on the verbal media raises two important points:

First, verbal information is stored in the brains of people. Only when people write this information down can it be stored in the files of the organization—whether in metal cabinets or on magnetic tape—and managers apparently do not write down much of what they hear. Thus the strategic data bank of the organization is not in the memory of its computers but in the minds of its managers.

Second, the manager's extensive use of verbal media helps to explain why he is reluctant to delegate tasks. When we note that most of the manager's important information comes in verbal form and is stored in his head, we can well appreciate his reluctance. It is not as if he can hand a dossier over to someone; he must take the time to "dump memory" —to tell that someone all he knows about the subject. But this could take so long that the manager may find it easier to do the task himself. Thus the

manager is damned by his own information system to a "dilemma of delegation"—to do too much himself or to delegate to his subordinates with inadequate briefing.

4

Folklore: Management is, or at least is quickly becoming, a science and a profession. By almost any definitions of *science* and *profession*, this statement is false. Brief observation of any manager will quickly lay to rest the notion that managers practice a science. A science involves the enaction of systematic, analytically determined procedures or programs. If we do not even know what procedures managers use, how can we prescribe them by scientific analysis? And how can we call management a profession if we cannot specify what managers are to learn? For after all, a profession involves "knowledge of some department of learning or science" (*Random House Dictionary*).[10]

Fact: The managers' programs—to schedule time, process information, make decisions, and so on—remain locked deep inside their brains. Thus, to describe these programs, we rely on words like *judgment* and *intuition*, seldom stopping to realize that they are merely labels for our ignorance.

Back to a basic description of managerial work

The manager's job can be described in terms of various "roles," or organized sets of behaviors identified with a position.   As we shall see, formal authority gives rise to the three interpersonal roles, which in turn give rise to the three informational roles; these two sets of roles enable the manager to play the four decisional roles.

Interpersonal roles

Three of the manager's roles arise directly from his formal authority and involve basic interpersonal relationships.

1

First is the *figurehead* role. By virtue of his position as head of an organizational unit, every manager must perform some duties of a ceremonial nature. The president greets the touring dignitaries, the foreman attends the wedding of a lathe operator, and the sales manager takes an important customer to lunch.

Duties that involve interpersonal roles may sometimes be routine, involving little serious communication and no important decision making. Nevertheless, they are important to the smooth functioning of an organization and cannot be ignored by the manager.

2

Because he is in charge of an organizational unit, the manager is responsible for the work of the people of that unit. His actions in this regard constitute the *leader* role. Some of these actions involve leadership directly—for example, in most organizations the manager is normally responsible for hiring and training his own staff.

In addition, there is the indirect exercise of the leader role. Every manager must motivate and encourage his employees, somehow reconciling their individual needs with the goals of the organization. In virtually every contact the manager has with his employees, subordinates seeking leadership clues probe his actions: "Does he approve?" "How would he like the report to turn out?" "Is he more interested in market share than high profits?"

The influence of the manager is most clearly seen in the leader role. Formal authority vests him with great potential power; leadership determines in large part how much of it he will realize.

3

The literature of management has always recognized the leader role, particularly those aspects of it related to motivation. In comparison, until recently it has hardly mentioned the *liaison* role, in which the manager makes contacts outside his vertical chain of command. This is remarkable in light of the finding of virtually every study of managerial work that managers spend as much time with peers and other people outside their units as they do with their own subordinates—and, surprisingly, very little time with their own superiors.

As we shall see shortly, the manager cultivates such contacts largely to find information. In effect, the liaison role is devoted to building up the manager's own external information system—informal, private, verbal, but, nevertheless, effective.

Informational roles

By virtue of his interpersonal contacts, both with his subordinates and with his network of contacts, the manager emerges as the nerve center of his organizational unit. He may not know everything, but he typically knows more than any member of his staff.

The processing of information is a key part of the manager's job. In my study, the chief executives spent 40% of their contact time on activities devoted exclusively to the transmission of information; 70% of their incoming mail was purely informational (as opposed to requests for action). The manager does not leave meetings or hang up the telephone in order to get back to work. In large part, communication *is* his work. Three roles describe these informational aspects of managerial work.

1
As *monitor*, the manager perpetually scans his environment for information, interrogates his liaison contacts and his subordinates, and receives unsolicited information, much of it as a result of the network of personal contacts he has developed. Remember that a good part of the information the manager collects in his monitor role arrives in verbal form, often as gossip, hearsay, and speculation. By virtue of his contacts, the manager has a natural advantage in collecting this soft information for his organization.

2
He must share and distribute much of this information. Information he gleans from outside personal contacts may be needed within his organization. In his *disseminator* role, the manager passes some of his privileged information directly to his subordinates, who would otherwise have no access to it. When his subordinates lack easy contact with one another, the manager will sometimes pass information from one to another.

3
In his *spokesman* role, the manager sends some of his information to people outside his unit—a president makes a speech to lobby for an organization cause, or a foreman suggests a product modification to a supplier. In addition, as part of his role as spokesman, every manager must inform and satisfy the influential people who control his organizational unit. For the foreman, this may simply involve keeping the plant manager informed about the flow of work through the shop.

The president of a large corporation, however, may spend a great amount of his time dealing with a host of influences. Directors and shareholders must be advised about financial performance; consumer groups must be assured that the organization is fulfilling its social responsibilities; and government officials must be satisfied that the organization is abiding by the law.

Decisional roles

Information is not, of course, an end in itself; it is the basic input to decision making. One thing is clear in the study of managerial work: the manager plays the major role in his unit's decision-making system. As its formal authority, only he can commit the unit to important new courses of action; and as its nerve center, only he has full and current information to make the set of decisions that determines the unit's strategy. Four roles describe the manager as decision-maker.

1
As *entrepreneur*, the manager seeks to improve his unit, to adapt it to changing conditions in the environment. In his monitor role, the president is constantly on the lookout for new ideas. When a good one appears, he initiates a development project that he may supervise himself or delegate to an employee (perhaps with the stipulation that he must approve the final proposal).

There are two interesting features about these development projects at the chief executive level.
First, these projects do not involve single decisions or even unified clusters of decisions. Rather, they emerge as a series of small decisions and actions sequenced over time. Apparently, the chief executive prolongs each project so that he can fit it bit by bit into his busy, disjointed schedule and so that he can gradually come to comprehend the issue, if it is a complex one.

Second, the chief executives I studied supervised as many as 50 of these projects at the same time. Some projects entailed new products or processes; others involved public relations campaigns, improvement of the cash position, reorganization of a weak department, resolution of a morale problem in a foreign division, integration of computer operations, various acquisitions at different stages of development, and so on.

The chief executive appears to maintain a kind of inventory of the development projects that he himself supervises—projects that are at various stages of development, some active and some in limbo. Like a juggler, he keeps a number of projects in the air; periodically, one comes down, is given a new burst of energy, and is sent back into orbit. At various intervals, he put new projects on-stream and discards old ones.

2

While the entrepreneur role describes the manager as the voluntary initiator of change, the *disturbance handler* role depicts the manager involuntarily responding to pressures. Here change is beyond the manager's control. He must act because the pressures of the situation are too severe to be ignored: strike looms, a major customer has gone bankrupt, or a supplier reneges on his contract.

In effect, every manager must spend a good part of his time responding to high-pressure disturbances. No organization can be so well run, so standardized, that it has considered every contingency in the uncertain environment in advance. Disturbances arise not only because poor managers ignore situations until they reach crisis proportions, but also because good managers cannot possibly anticipate all the consequences of the actions they take.

3

The third decisional role is that of *resource allocator*. To the manager falls the responsibility of deciding who will get what in his organizational unit. Perhaps the most important resource the manager allocates is his own time. Access to the manager constitutes exposure to the unit's nerve center and decision-maker. The manager is also charged with designing his unit's structure, that pattern of formal relationships that determines how work is to be divided and coordinated.

Also, in his role as resource allocator, the manager authorizes the important decisions of his unit before they are implemented. By retaining this power, the manager can ensure that decisions are interrelated; all must pass through a single brain. To fragment this power is to encourage discontinuous decision making and a disjointed strategy.

There are a number of interesting features about the manager's authorizing others' decisions. First, despite the widespread use of capital budgeting procedures—a means of authorizing various capital expenditures at one time—executives in my study made a great many authorization decisions on an ad hoc basis. Apparently, many projects cannot wait or simply do not have the quantifiable costs and benefits that capital budgeting requires.

Second, I found that the chief executives faced incredibly complex choices. They had to consider the impact of each decision on other decisions and on the organization's strategy. They had to ensure that the decision would be acceptable to those who influence the organization, as well as ensure that resources would not be overextended. They had to understand the various costs and benefits as well as the feasibility of the proposal. They also had to consider questions of timing. All this was necessary for the simple approval of someone else's proposal. At the same time, however, delay could lose time, while quick approval could be ill considered and quick rejection might discourage the subordinate who had spent months developing a pet project.

One common solution to approving projects is to pick the man instead of the proposal. That is, the manager authorizes those projects presented to him by people whose judgment he trusts. But he cannot always use this simple dodge.

4

The final decisional role is that of *negotiator*. Studies of managerial work at all levels indicate that managers spend considerable time in negotiations: the president of the football team is called in to work out a contract with the holdout superstar; the corporation president leads his company's contingent to negotiate a new strike issue; the foreman argues a grievance problem to its conclusion with the shop steward. As Leonard Sayles puts it, negotiations are a "way of life" for the sophisticated manager.

These negotiations are duties of the manager's job; perhaps routine, they are not to be shirked. They are an integral part of his job, for only he has the authority to commit organizational resources in "real time," and only he has the nerve center information that important negotiations require.

The integrated job

It should be clear by now that the ten roles I have been describing are not easily separable. In the terminology of the psychologist, they form a gestalt, an integrated whole. No role can be pulled out of the framework and the job be left intact. For example, a manager without liaison contacts lacks external information. As a result, he can neither disseminate the information his employees need nor make decisions that adequately reflect external conditions. (In fact, this is a problem for the new person in a managerial position, since he cannot make effective decisions until he has built up his network of contacts.)

Here lies a clue to the problems of team management.[16] Two or three people cannot share a single managerial position unless they can act as one entity. This means that they cannot divide up the ten roles unless they can very carefully reintegrate

them. The real difficulty lies with the informational roles. Unless there can be full sharing of managerial information—and, as I pointed out earlier, it is primarily verbal—team management breaks down. A single managerial job cannot be arbitrarily split, for example, into internal and external roles, for information from both sources must be brought to bear on the same decisions.

To say that the ten roles form a gestalt is not to say that all managers give equal attention to each role.

Nevertheless, in all cases the interpersonal, informational, and decisional roles remain inseparable.

Toward more effective management

What are the messages for management in this description? I believe, first and foremost, that this description of managerial work should prove more important to managers than any prescription they might derive from it. That is to say, *the manager's effectiveness is significantly influenced by his insight into his own work.* His performance depends on how well he understands and responds to the pressures and dilemmas of the job. Thus managers who can be introspective about their work are likely to be effective at their jobs. The ruled insert on page 58 offers 14 groups of self-study questions for managers. Some may sound rhetorical; none is meant to be. Even though the questions cannot be answered simply, the manager should address them.

Let us take a look at three specific areas of concern. For the most part, the managerial logjams—the dilemma of delegation, the data base centralized in one brain, the problems of working with the management scientist—revolve around the verbal nature of the manager's information. There are great dangers in centralizing the organization's data bank in the minds of its managers. When they leave, they take their memory with them. And when subordinates are out of convenient verbal reach of the manager, they are at an informational disadvantage.

1
The manager is challenged to find systematic ways to share his privileged information. A regular debriefing session with key subordinates, a weekly memory dump on the dictating machine, the maintaining of a diary of important information for limited circulation, or other similar methods may ease the logjam of work considerably. Time spent disseminating this information will be more then regained when decisions must be made. Of course, some will raise the question of confidentiality. But managers would do well to weigh the risks of exposing privileged information against having subordinates who can make effective decisions.

If there is a single theme that runs through this article, it is that the pressures of his job drive the manager to be superficial in his actions—to overload himself with work, encourage interruption, respond quickly to every stimulus, seek the tangible and avoid the abstract, make decisions in small increments, and do everything abruptly.

2
Here again, the manager is challenged to deal consciously with the pressures of superficiality by giving serious attention to the issues that require it, by stepping back from his tangible bits of information in order to see a broad picture, and by making use of analytical inputs. Although effective managers have to be adept at responding quickly to numerous and varying problems, the danger in managerial work is that they will respond to every issue equally (and that means abruptly) and that they will never work the tangible bits and pieces of informational input into a comprehensive picture of their world.

As I noted earlier, the manager uses these bits of information to build models of his world. But the manager can also avail himself of the models of the specialists. Economists describe the functioning of markets, operations researchers simulate financial flow processes, and behavioral scientists explain the needs and goals of people. The best of these models can be searched out and learned.

In dealing with complex issues, the senior manager has much to gain from a close relationship with the management scientists of his own organization. They have something important that he lacks—time to probe complex issues. An effective working relationship hinges on the resolution of what a colleague and I have called "the planning dilemma."[17] Managers have the information and the authority; analysts have the time and the technology. A successful working relationship between the two will be effected when the manager learns to share his information and the analyst learns to adapt to the manager's needs. For the analyst, adaptation means worrying less about the elegance of the method and more about its speed and flexibility.

It seems to me that analysts can help the top manager especially to schedule his time, feed in analytical information, monitor projects under his supervision, develop models to aid in making choices, design contingency plans for disturbances that can be anticipated, and conduct "quick-and-dirty" analysis for those that cannot. But there can be no cooperation if the analysts are out of the mainstream of the manager's information flow.

3

The manager is challenged to gain control of his own time by turning obligations to his advantage and by turning those things he wishes to do into obligations. The chief executives of my study initiated only 32% of their own contacts (and another 5% by mutual agreement). And yet to a considerable extent they seemed to control their time. There were two key factors that enabled them to do so.

First, the manager has to spend so much time discharging obligations that if he were to view them as just that, he would leave no mark on his organization. The unsuccessful manager blames failure on the obligations; the effective manager turns his obligations to his own advantage. A speech is a chance to lobby for a cause; a meeting is a chance to reorganize a weak department; a visit to an important customer is a chance to extract trade information.

Second, the manager frees some of his time to do those things that he—perhaps no one else—thinks important by turning them into obligations. Free time is made, not found, in the manager's job; it is forced into the schedule. Hoping to leave some time open for contemplation or general planning is tantamount to hoping that the pressures of the job will go away. The manager who wants to innovate initiates a project and obligates others to report back to him; the manager who needs certain environmental information establishes channels that will automatically keep him informed; the manager who has to tour facilities commits himself publicly.

The educator's job

Finally, a word about the training of managers. Our management schools have done an admirable job of training the organization's specialists—management scientists, marketing researchers, accountants, and organizational development specialists. But for the most part they have not trained managers.[18]

Management schools will begin the serious training of managers when skill training takes a serious place next to cognitive learning. Cognitive learning is detached and informational, like reading a book or listening to a lecture. No doubt much important cognitive material must be assimilated by the manager-to-be. But cognitive learning no more makes a manager than it does a swimmer. The latter will drown the first time he jumps into the water if his coach never takes him out of the lecture hall, gets him wet, and gives him feedback on his performance.

In other words, we are taught a skill through practice plus feedback, whether in a real or a simulated situation. Our management schools need to identify the skills managers use, select students who show potential in these skills, put the students into situations where these skills can be practiced, and then give them systematic feedback on their performance.

My description of managerial work suggests a number of important managerial skills—developing peer relationships, carrying out negotiations, motivating subordinates, resolving conflicts, establishing information networks and subsequently disseminating information, making decisions in conditions of extreme ambiguity, and allocating resources. Above all, the manager needs to be introspective about his work so that he may continue to learn on the job.

Many of the manager's skills can, in fact, be practiced, using techniques that range from role playing to videotaping real meetings. And our management schools can enhance the entrepreneurial skills by designing programs that encourage sensible risk taking and innovation.

No job is more vital to our society than that of the manager. It is the manager who determines whether our social institutions serve us well or whether they squander our talents and resources. It is time to strip away the folklore about managerial work, and time to study it realistically so that we can begin the difficult task of making significant improvements in its performance.

1. All the data from my study can be found in Henry Mintzberg, *The Nature of Managerial Work* (New York: Harper & Row, 1973).

2. Robert H. Guest, "Of Time and the Foreman," *Personnel*, May 1956, p. 478.

3. Rosemary Stewart, *Managers and Their Jobs* (London: Macmillan, 1967); see also Sune Carlson, *Executive Behaviour* (Stockholm: Strömbergs, 1951), the first of the diary studies.

4. Francis J. Aguilar, *Scanning the Business Environment* (New York: Macmillan, 1967), p. 102.

5. Unpublished study by Irving Choran, reported in Mintzberg, *The Nature of Managerial Work*.

6. Robert T. Davis, *Performance and Development of Field Sales Managers* (Boston: Division of Research, Harvard Business School, 1957); George H. Copeman, *The Role of the Managing Director* (London: Business Publications, 1963).

7. Stewart, *Managers and Their Jobs*; Tom Burns, "The Directions of Activity and Communication in a Departmental Executive Group," *Human Relations* 7, no. 1 (1954): 73.

8. H. Edward Wrapp, "Good Managers Don't Make Policy Decisions," HBR September-October 1967, p. 91; Wrapp refers to this as spotting opportunities and relationships in the stream of operating problems and decisions; in his article Wrapp raises a number of excellent points related to this analysis.

9. Richard E. Neustadt, *Presidential Power* (New York: John Wiley, 1960), pp. 153-154; italics added.

10. For a more thorough, though rather different, discussion of this issue, see Kenneth R. Andrews, "Toward Professionalism in Business Management," HBR March-April 1969, p. 49.

11. C. Jackson Grayson, Jr., in "Management Science and Business Practice," HBR July-August 1973, p. 41, explains in similar terms why, as chairman of the Price Commission, he did not use those very techniques that he himself promoted in his earlier career as a management scientist.

12. George C. Homans, *The Human Group* (New York: Harcourt, Brace & World, 1950), based on the study by William F. Whyte entitled *Street Corner Society*, rev. ed. (Chicago: University of Chicago Press, 1955).

13. Neustadt, *Presidential Power*, p. 157.

14. Peter F. Drucker, *The Practice of Management* (New York: Harper & Row, 1954), pp. 341-342.

15. Leonard R. Sayles, *Managerial Behavior* (New York: McGraw-Hill, 1964), p. 162.

16. See Richard C. Hodgson, Daniel J. Levinson, and Abraham Zaleznik, *The Executive Role Constellation* (Boston: Division of Research, Harvard Business School, 1965), for a discussion of the sharing of roles.

17. James S. Hekimian and Henry Mintzberg, "The Planning Dilemma," *The Management Review*, May 1968, p. 4.

18. See J. Sterling Livingston, "Myth of the Well-Educated Manager," HBR January-February 1971, p. 79.

John F. Nash

Accounting for Creativity

Conventional accounting controls are largely ineffective when applied in a creative research environment. This article discusses the reasons for this and proposes the development of a new set of R&D accounting standards.

Summary of the Problem

Cost accounting grew up in a manufacturing environment where product costing, although not always straightforward, could be achieved with acceptable realism and where the efficiency of operations could demonstrably be improved by strict accounting controls. As the result of certain accidents of history, however, areas of creative work have fallen into the arena in which cost-accounting procedures are being imposed. Notably, scientific and other types of research work are being conducted in large industrial organizations, often under government contract funding. Cost-accounting methods have largely failed to provide realistic "product costing" in these areas because of the difficulty of attaching a labor-hour value to the creative thought process. On the other hand, increasing pressure has been brought to bear—by management, accountants, auditors, and government—to force creative work of this type into the same mold as the manufactured product. The outcome of this pressure has not been to improve materially the efficiency of research work, but rather to stifle it; the preoccupation with accounting controls has put tension and rigidity where relaxation and flexibility are demanded by the nature of creative thinking. Moreover, the pressure has resulted in a semblance of conformity with cost-accounting procedures whereas, in fact, shuffling of accounting figures and arbitrary distribution of costs among projects are commonplace.

There are factions in our society who insist on the strictest accountability among individuals, firms, and industries that receive government funding. The aerospace industry in particular has received the scrutiny,[7] and often the condemnation, of spokesmen who believed that inefficiency, waste, and sometimes excessive profits were leading to the intolerable squandering of public funds. These spokesmen have called for and have caused to be established an increasingly strict set of cost-accounting standards which must be imposed throughout the industry. The controls are intended to apply uniformly to manufacture, engineering design, systems studies, and to scientific research. Unfortunately, the effectiveness of the controls is substantially different in these different areas, and the consequences of implementing the controls are not uniformly beneficial.

Unfortunately, too, when cases come to light in which irregularities occur in the accounting procedures or circumvention of controls occurs in the research areas, the response is generally to regard them as weaknesses to be stamped out by making those controls still more rigid. The more appropriate response, however, should be to examine why the irregularities or the circumventions were thought to be necessary. It is clear that for the most part scientists and others engaged in research work are professionally motivated, responsible people, and any participation in irregular accounting practices normally is only to escape from an intolerable burden of unrealistic controls. The actions of the research workers and their supervisors are regrettable, but they are understandable in terms of the situation confronting them. The controls are stifling the research workers' creativity and often making impossible demands on their judgment. The problem of distributing the costs of their creative work among concurrent projects is a case in point. In some instances it is even possible that more effective—and more cost-effective—research is being produced by circumvention of the controls than would be produced by attempted compliance with the controls.

A Different Set of Standards

Until it is recognized that research work, at least in part, is of a character distinct from that of manufacturing work, it will be unreasonable to expect research workers to comply—or even be able to comply—with strict accounting controls. There is an urgent need for studies to be conducted with the goal of developing a revised set of cost-accounting standards appropriate to creative work. What those standards will look like is difficult to say at this stage. Some very difficult problems will have to be overcome, which will require the cooperation of research workers, behavioral scientists, the various audit groups, and representatives from other branches of accounting. The Cost Accounting Standards Board would be in an ideal position to coordinate these studies. The specific objectives of the new set of accounting standards no doubt will emerge along with the standards themselves. But it would seem that these objectives should recognize the importance and the unique character of creative work. Cost effectiveness (in whatever form it should be interpreted) also would be an obvious objective, and accountability is necessary, particularly in the case of contract-funded programs. Last, but not least, the standards must provide for the generation of suitable accounting information for planning purposes—planning which will ensure the continued flow of funds necessary to sustain research and development at the level which society finds appropriate.

The case for treating research and development as a special situation is a good one—and one that should not be politically contentious. Most individual scientific research programs (except for a small number of conspicuous projects such as the space program) represent relatively small items of national expenditure. Moreover, the survival of this country as an advanced industrialized nation demands continued creativity and innovation. The effort involved in developing a revised set of accounting standards for research and development, and the difficulties associated with having one set of standards in this area and another in the manufacturing area, would seem to represent only a small price to pay for effective, vital research programs.

1. H.G. Rickover, "Accounting Practices—Do They Protect the Public?" *The Federal Accountant*, June 1975, pp. 45-56; and H.W. Wright, "Uniform Cost Accounting Standards: Past, Present, and Future," *Financial Executive*, May 1971, pp. 16-23.

2. D.R. Snyder, "Cost Analysis and Control of RDT&E Projects," *Management Accounting*, 1971, no. 3, pp. 42-47; and S.C. Watson, "A Vote for R&D Profit Centers," *Management Accounting*, April 1975, pp. 50-54.

3. T.W. McRae, "Human Resource Accounting: Nature and Prospects," *The Accounting Review*, December 1970, pp. 1-15; and P. Ogan, "A Human Resource Value Model for Professional Service Organizations," *The Accounting Review*, April 1976, pp. 306-320.

4. H.D. Sasaki, "Planning and Controlling Research and Development Costs," *Management Accounting*, May 1969, pp. 44-50.

5. "Where Private Industry Puts Its Research Money," *Business Week*, June 28, 1976, pp. 62-84.

6. Senator William Proxmire, "Planning, Programming, and Budgeting: The Agencies and the Congress," speech reproduced in L.J. Seidler and L.L. Seidler, *Social Accounting: Theory, Issues, and Cases* (Los Angeles, Melville Publishing Co., 1975), pp. 164-175.

7. H.W. Wright, "Lockheed Aircraft Corporation: A Case of Major Uncertainty," *The Federal Accountant*, June 1971, pp. 10-29.

Science and Technology: The Road Ahead

Frank Press

Recent public opinion surveys indicate a continuing, if not growing, high regard for scientists and engineers (*1*). They are seen as being responsible for much of our country's past success. They are looked to as those members of our society whose work will most likely be responsible for our succeeding in the future.

This is a great vote of confidence. But to many of us, this comes as something of a surprise. Some, I am sure, feel ambivalent about it. Do we deserve this trust and faith? Or is the public too naive?

On the other hand, do we underrate ourselves—our past performances and our current capabilities? Could it be that, in view of the immense problems and uncertainties ahead, we are suffering from a new lack of confidence—a failure of nerve?

Still more questions come to mind: To what extent are we responsible for the technological backlashes of our previous successes, and can we correct them and avoid others in the future? Finally—and perhaps most important—can we justify the public's confidence in us by generating further advances in science and technology that can be used creatively to build a better world?

These are among the questions I would like to address in this article, trying to place my comments in some perspective with the realities we all recognize, and particularly with those that have been thrust before me since I have assumed the role of Science and Technology Adviser to the President.

The answers are important. For, if the public is right—and I believe that in large measure they are—it may be time for some new attitudes and actions on the part of the science and engineering communities. Among them must be a new spirit of self-renewal and cooperation among our professions, new self-assertion and positive attitudes about our future roles, new confidence in the future creativity of science and technology. In

short, we should rise to meet the public's image and expectations of us. And, in doing so, we may just find that the hard support—the federal budgets proposed and the congressional appropriations and authorizations approved—will grow accordingly. We may also find that our institutions and political factions may yield to the changes necessary to allow our best science and technology to shine through.

Many may be skeptical about this. Many may have doubts about the appropriateness of this kind of clarion call to science, so let me spend some time justifying it. As I go on, perhaps you will see some of the reasons for my optimism and for the need for initiating new attitudes and ideas to promote the positive power of our professions.

I will begin with some basics. Everywhere one looks today, it is apparent that the success of science is essential to human survival. Human numbers, human institutions, and human expectations demand the extension and application of human knowledge. Not to meet that demand does not mean limiting growth or moving toward any kind of stability. In the dynamic world we have created, it means fomenting human misery, economic collapse, social upheaval, and, at worst, war. The choice before us then is not one of growth or no growth—as was popular to debate a few years ago—but between various approaches to controlling and directing growth in the most constructive and humane manner. It is toward this end that science and government and industry and the public must all work together, building not only the technological systems but the institutional ones that will make our complex society serve the best interests of all.

On this account, let me turn to some interactions between science and government—particularly this Administration, which I have had an opportunity to come to know. I have been encouraged during my contacts in Washington—in the White House, the agencies and the

Congress—by the attitudes I have discovered toward science and technology. Working with these people on the difficult problems of science and technology policy, the problems of university research, and the budget has shown me that there is an underlying confidence in our ability to search out the answers to these problems.

The President, in particular, holds a strong belief in the capabilities and potential of science and technology and has, on several occasions, expressed his personal concern over maintaining their health in America (*2*). The latest of these expressions was in his State of the Union Message to the Congress, wherein he spoke of the Administration's proposed budget increases for basic research (*3*). In viewing the President's attitude and ideas on science and technology, one must be cognizant of a number of things—dilemmas of politics and national priorities.

The crucial point is the need for innovation. And a principal basis of innovation today is research and development. This is one reason why we are concerned with the state of industrial R & D in this country and why the Administration will be focusing much attention on it in the coming year.

Of course, all our hopes for increased industrial production, and economic growth in general, are contingent upon an adequate supply of energy. The energy situation has been particularly agonizing. It represents a political, as well as a scientific and technological challenge of the first order. We know that some time in the next century, we will achieve a virtually unlimited, renewable and clean energy supply. The immediate problem, that of the coming decades, is getting from here to there in the face of diminishing oil resources without large-scale economic dislocation.

Another important human need and its source—food and agriculture—can be set set forth by a few facts.

Here are some of them, and not particularly in order of importance: (i) Agriculture is this country's largest industry, with assets of over $531 billion. (ii) The food and fiber industries are the nation's biggest employers, with between 14 and 17 million people working in some phase of them from growth to sales. (iii) Since 1971, U.S. agricultural exports have tripled, to a record $24 billion last year. This has made a net contribution of $10 billion

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to our balance of payments. (iv) The United States supplies about half of the grain that moves in world trade and three-fourths of the soybeans. It provides about 70 percent of all the food aid (*10*).

But on the other side of the coin are the following: (i) Most nations are chronic importers of food, with the situation growing worse. While 45 exported food or were self-sufficient in 1950, only 19 nations did so in 1974, with four countries, including the United States, accounting for more than 90 percent of the exports. (ii) During the period from 1961 to 1974, 39 of the 86 developing countries, accounting for 24 percent of the Third World, had population growth in excess of food supplies. Eighty percent of the entire Third World's population demand for food was in excess of its supply. (iv) U.N. demographers point out that, merely to maintain the present desperately low level of per capita consumption, cereal output would have to increase by something like 30 million tons a year, which amounts to two-thirds of the Third World's average imports during the years 1970 to 1975. By the year 2000, with a population of about 6.2 billion and an annual growth of 110 million, the grain shortfall, other things being equal, will have increased by 70 percent.

Taken all together, these facts indicate a remarkable success story for American agriculture while, at the same time, throwing up an awesome new challenge to our agricultural research community. I emphasize the latter, especially because it appears that the heaviest burden, for developing ways to meet future food needs, lies with them. The key to future agricultural productivity in our country, and to development of agriculture in the Third World—the tropics and arid regions where those countries lie—is in new research. It is in such research areas as: (i) biological nitrogen fixation to reduce the demand for chemical fertilization, their energy use, cost, and environmental impact; (ii) photosynthesis increase to improve plant efficiency and hence crop yield; (iii) genetic research to allow the rapid development of crop plants that can withstand stresses associated with weather and climate change, diseases and pests; (iv) integrated pest management systems to help reduce the use of chemical pesticides and alleviate the huge food losses attributed to pests.

Also to be included in this list should be the work to develop food, fiber, and other new commodity crops that can be economically grown in arid lands, in saline soils, in the humid tropics, and on other lands and under other conditions

not now amenable to agriculture. There are encouraging signs today that this can be done; among these are the tropical leucaena plant which may be an important new source of forage (*11*); the winged bean, a protein-rich food for humans; the jojoba plant, a potentially important source of wax and oil; and the guayule bush that has produced a successful rubber, both able to grow and be cultivated in the desert (*12*).

These offer just some of the proof that today we are using only a small fraction, about 1 percent, of the world's 350,000 species of plants. In fact, we depend on less than 20 of them for our major food and fiber crops (*13*). There is also a growing interest today in the potential use of crops, crop residues, and biomass in general for fuels. Bioconversion is rapidly becoming a household word in energy circles.

All this indicates that the great agricultural revolutions still lie ahead of us, and the key to them is research. I think we are recognizing this in our new agricultural programs with their emphasis on basic research. For example, in the coming fiscal year, the U.S. Department of Agriculture will double the funding of its recently initiated extramural competitive grants program—from $15 million to $30 million—and most of this will go for basic research in the areas of interest I mentioned before (*14*). The National Science Foundation also is supporting increased basic research in the biological sciences related to plants.

We cannot discuss agriculture without thinking about climate and weather. And these have been things it is difficult *not* to think about these past 2 years. Our most immediate concern, of course, has been with weather variability as this is where the impact has been—from droughts, severe cold, and, this year, winter storms. Some climatologists believe that such variability is part of the pattern of longer-range climate change. We are interested in both, as they are going to have a widespread impact on human activity—our agriculture, energy needs, and many other aspects of our lives. The Administration and the Congress have both shared their concern over the need for a National Climate Program. We are moving ahead with an interagency climate research program this year. The Department of Commerce's National Oceanic and Atmospheric Administration will serve as the "lead" agency in this program, which will include the departments of Agriculture, Commerce, Defense, Energy, and Interior, along with the Environmental Protection Agency, National

Aeronautics and Space Administration (NASA), and National Science Foundation (NSF). The President's 1979 budget for this program will be $104 million, a 39 percent increase over this year's funding of climate research (*14*).

Climate represents, in a sense, one of our major environmental issues, but also one of the least controllable; we will be studying extensively man-induced effects on it, such as that of increased carbon dioxide in the atmosphere as a result of human activity. There are a great many other important, and perhaps more controllable, environmental issues of immediate concern to this Administration. The President maintains his abiding interest in the environment. He feels strongly that it is possible—and essential—for science and technology to help us advance in the most environmentally beneficial way, making certain that our advances today are not made at the expense and to the detriment of future generations. One of his highest priority environmental interests at this time is the Administration's legislative proposal concerning the preservation of Alaska's wilderness and wildlife.

While we try to preserve our last pristine environments in Alaska, we face great environmental challenges in the rest of our country. One of the most important of these has become dealing with the numerous toxic substances and other chemicals we introduce into our environment, workplaces, and consumer products. On the broad environmental front, it is encouraging to see that federal outlays to support environmental programs in 19 agencies and departments will increase by 11 percent in 1979 (*14*, p. 287). This covers a wide range of activities in pollution control and abatement, basic environmental sciences, and protection and enhancement efforts.

I have placed considerable emphasis throughout this article on the need for research. We have been particularly pleased that, with the President's support, we have been able to increase the 1979 fiscal year federal funding for basic research by about 11 percent (*14*, p. 305). For those of you who wonder how this came about, let me say that it was a process that started during a recent preview when certain issues were identified in the Office of Management and Budget (OMB) planning sessions with the President. Subsequently, there were a number of meetings in which OMB and OSTP met with leaders in science and engineering from universities, industry,

and the government to review their impressions of trends, issues, and alternatives. We also worked with the Vice President, Cabinet members, and the heads of NASA and NSF. All this and more culminated in a proposal to the President describing the problem and suggesting new increases in basic research funding. The President agreed to our recommendations. The outcome is that the proposed federal obligational authority for support of the conduct of basic research will total more than $3.6 billion, a 10.9 percent growth over fiscal 1978 (about 5 percent real growth) (*14*, p. 305).

I should note here concerning this outcome that we have been working with executives of the federal science agencies to see that this funding growth will be used appropriately—that is, first, that it is invested into the promising areas of scientific inquiry and, second, that it is used to ameliorate some of the problems associated with the performance of research in colleges and universities, including obsolescence of equipment, lack of opportunities for young investigators, and the paperwork burden associated with proposing new research directions.

During the course of our interactions on research with the departments and agencies, the President queried the Cabinet members on what they thought some of the important research questions of national interest were. Here are a few examples cited by the Cabinet officers: Can simple chemical reactions be discovered that will generate visible radiation? How does the material pervading the universe collect to form complex organic molecules, stars, and galaxies? What are the physical processes that govern climate? How do organisms in the deep sea influence the productivity of the ocean? Can new homogeneous catalysts be prepared that will catalyze chemical processes important to the chemical industry? What are the limits for communications use of the channel capacity in the visible spectrum? What are the factors—social, economic, political, and cultural—which govern population growth? At what rate will atmospheric carbon dioxide concentrations increase as a result of increased use of fossil fuels? How do cracks initiate and propagate in materials? How do cells change during growth and development? What are the mechanisms responsible

for sensory signal processing, neural membrane phenomena, and distinct chemical operations of nerve junctions? How can structures be designed and constructed to be both economical and earthquake-resistant? What predisposing factors govern cellular differentiation and function in plants and animals?

I began with many questions and I am concluding with many still to be answered. I have covered only some of the many activities in which I and my office have been involved—such issues as human nutrition, dam safety, earthquake hazards, mineral policy, space policy, and many other important matters. We are hard at work on what we feel are some of the major issues of our times. It is essential that all work in the basic scientific disciplines advances and provides a sounder basis for our science policy decisions. The work of the scientist must continue to merit and earn the esteem with which the public holds science and scientists.

We owe those who support us and place their hopes in us a very frank and honest appraisal of what we realistically can and cannot be expected to do, what costs and burdens must be borne to fulfill those expectations, and the uncertainties and risks that lie ahead for all of us. "The business of the future is dangerous," Whitehead warned us.

We must throw back certain challenges to them. Nature holds tightly to her deepest secrets and reveals them grudgingly. Patience and endurance are necessary. As John F. Kennedy once questioned, "I don't understand why we're suddenly so fatigued. The struggle won't be over in this century." There will always be uncertainties and unknowns. The quality of our science will reflect our pursuit of excellence throughout our entire society—our education, our public concerns and interests, and our institutions. Our technology will never be foolproof or fail-safe, but always dependent on the human factor—the quality, dedication, and responsibility of our workforce. There is perhaps a moral lesson in all this—we will get, in the long run, the society and civilization we deserve. And, as I recall someone once saying, "Why not the best?"

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"WE'VE SPENT FAR TOO MUCH TIME, ATTENTION AND MONEY MAKING DEVELOPMENT A COMFORTABLE PROCESS. LET'S NOW BEGIN TO REALLY FOCUS ON THE PHILOSOPHY THAT ALL DEVELOPMENT IS SELF-DEVELOPMENT!"

YOU CAN'T DEVELOP ANOTHER

BY ROY W. WALTERS

We are in an era of grave managerial shortage. . . . Knowledgeable academicians are writing and lecturing about this subject. They cite evidence from their studies and research in business, education and government organizations, of the management failures in these institutions. They report on demographic data showing birth rate gaps 25 to 30 years ago.

Business executives are speaking out on the subject and some of them are pushing their organizations to improve their manpower planning and management development efforts.

I share the concerns of all these people. But my examination of the situation, and my experience in working with organizations, convinces me that there is a major lack of understanding about the development process and this is contributing greatly to the issues.

It appears to me that the thrust of most efforts is toward developing managers, i.e., doing things *to them, for them* and *with them* so

that they will develop. The failure to recognize that no manager can develop another manager and that all development is self-development is the cause of our problems. This thought is very disturbing to many managers. It hurts their self-image. They have deluded themselves for years that they have been developing their people. They hold rigidly to this position. When working on this matter with managers they immediately become defensive and use Vince Lombardi as their chief model. They say, "look at the great teams he developed" or "look at the number of great all-pros he developed."

I recognize Lombardi as a tough taskmaster, a brilliant football tactician. But he didn't develop these players. Instead he gave each man the opportunity to qualify for his teams by setting tough, demanding, high standards. But the fact remains that given these parameters, each player developed himself. The opportunity was there. They could push themselves to qualify under his standards or they could not. It was up to them. Many availed themselves of this

opportunity. Many did not, It was their choice, not Lombardi's.

Other examples abound. General Patton, Harold Geneen of IT&T, Manager Joe McCarthy of the Yankees, Admiral Hyman Rickover are names that readily come to mind. Examination of their managerial styles indicates that they, too, were tough, set high standards, and gave extensive responsibility to others. I feel certain that none of them believed that they developed their subordinates. As with Lombardi, they gave opportunities to their people. Those that took advantage and knew that none of their bosses were going to do things for them, succeeded.

What Can Organizations Do?

Given this shortage problem, what can organizations do? I believe there are two main areas where we can immediately begin to change. They are: our incumbent managers and those we will hire over the years.

What can we do with our present cadre of managers to help them understand that they are the ones most responsible for their

own development?

First, those above them can quit trying to develop them and adopt a new posture. Instead of telling them that they should go to this or that management training class, they can review with the subordinate specific classes that in their opinion address the performance deficiencies noted and let the person decide which one he or she wants to attend and at what time.

Several instances of this kind of handling will quickly communicate a story quite different from the previous posture of "big daddy knows what's best for you." This method will quickly produce an additional set of evaluation data. The boss can see how the subordinate makes decisions, how he or she manages their time and the quality of their decisions.

Second, the boss can quit telling the subordinate what to do in specific situations. A preferred role is to discuss all aspects and alternative decision possibilities and permit the subordinate to make the decision. Years of telling people what to do can build a very large dependency trait and continually communicate the "they know what's best" syndrome. Malcolm Knowles, an eminent educator who stresses the concept and theory of *competency development*, recognizes that *"we have convincing evidence that adults have a deep psychological need to be self-directing in their learning, even though they have been conditioned by their previous schooling to take a passive stance toward teachers."*[1]

Even if the subordinate knows of a better route or a different course they can never feel responsible for their own decision-making development. Again a spin-off is managerial performance evaluation data for the boss. If the boss constantly drives the car the subordinate will never learn to drive nor feel responsible for learning to drive. Of course, this means managing with a little more risk. Most bosses are reluctant to do this.

Third, bosses can begin to design subordinate responsibilities that gradually increase in magnitude. Once a subordinate masters a set of responsibilities there is

little additional growth potential in that position. There are not enough new assignments to move them, so something must be done to continue their development at their present position. This means cleaving portions of the boss's job and giving these responsibilities to the subordinate. This thought is very threatening to most bosses. So they clutch desperately to what they have and those below them starve.

Boredom and restlessness result and those trapped fault the organization for what is happening to them. Few have the courage to break out of their trap because they fail to understand their responsibilities for their own development. Giving them further growth opportunities, within the present assignment, generally prevents this. It communicates that the organization is interested in individual development and is not bound by structural constraints. And it quickly continues to reinforce those who are willing to break out of their trap.

Those items discussed for aiding present managers should not be looked upon as being easy and simple. Deep-seated attitudes and feelings, mainly about control, have resulted from years of operating in a manner that is based on a principle that managers do in fact develop subordinates. So beginning to change that will never be easy.

Handling New Hires

Turning now to what may be a more fruitful and certainly easier area, let's look at the handling of new hires intended for the managing ranks.

It behooves any management that recognizes the development as self-development issues and wants to resolve them, to immediately design an effort that clearly communicates to those new hires that they are the ones most responsible for their own development. The organization assumes the responsibility of letting that happen but each person has to do it himself or herself.

AR's EXECUTIVE DEVELOPMENT PROGRAM

The author of this article makes an important point:
Vince Lombardi was a "tough taskmaster, a brilliant
football tactician. But he didn't develop his play-
ers....each player developed himself. The opportu-
nity was there. They could push themselves to qual-
ity under his standards or they could not. It was
up to them."
                                              - John Gore

The AR Executive Development Program has always
stressed the concept of self-development, giving
potential executives growth opportunities within
their present assignment. Executive Development
does not mean doing things to and for managers.

As Walters puts it: "we no longer can afford the
luxury of highly structured training courses to
which people are 'sent,' zealously hawked and guarded
by training specialists....all development is self-
development. Remember you can't develop another
person. You can only set the conditions for it to
happen...."

                                              - Dick Fraser

Immediately after being placed on the payroll I would want these new hires to be involved in an orientation seminar of a different variety. I wouldn't want to waste time with lengthy exposures to key managers explaining their functions, and to explanations of insurance plans, disability plans, vacation policies, etc., etc. My orientation would have two objectives:

1. To initiate the process of communicating to the new hires that they must assume primary responsibility for their own growth and development in management ability.

2. To help the new hires take the first steps in planning a long-range personal-development program.

Most hires are hired to be managers. We may have a few specialist hires such as chemists, mathematicians, statisticians, actuaries, etc. But management's main proprietary responsibility is to determine in minimum time whether or now they can manage. I believe we greatly underestimate their learning capacities and we are rigidly locked into an insistence that these new hires must know technical details. *"How can they manage people with technical competency if they don't know the details?"*

I don't believe that it's necessary for bosses to know as much or more of the technical details as their subordinates do. I further believe that it's a managerial strength to know that you don't know. We can't afford the luxury of the time for new hires to learn technical details. We need that time to learn about their managerial competency. Furthermore, most new hires don't know if they can manage. They too will become bored and restless if they don't have meaningful responsibilities. Let's quickly put them to work managing and satisfy their learning appetites by having them learn the technical details while managing.

The content of this four or five-day seminar would include designs to assist their understanding of: basic work-motivation theory, basic learning theory, and human growth and development theory. Other designs would assist their examination of superior and subordinate roles and responsibilities, criteria for performance evaluation, and the importance and use of performance feedback. During this orientation they would be required to begin planning their own specific personal-development plans with the understanding that they would be expected to constantly update their plans.

Essential to my model of management development is the understanding that each of these new hires will report directly to a hand-picked, specially trained operating middle-management boss. These bosses will be those who possess those qualities we would all define as "good" qualities, those we would want future managers to emulate. I don't believe that organizations are cognizant of what our society has learned about basic learning theory. They seem to concentrate only on conscious learning, i.e., technical knowledge, managerial knowledge, interpersonal relationships knowledge, etc. This learning requires effort on the part of the learner. They can ignore or reject any portion or all of it. Organizations ignore completely the more mystifying learning-subconscious learning. This area pertains to standards, value systems, styles of management, informal communications systems, informal reward systems, willingness to take calculated risks, etc. This learning requires no effort and it's continuous . . . management can do nothing to stop it.

So the question management must ask about the management-development process is, "from whom do you want these new people to learn these subconscious things?" From my point of view it is from our best managers. To give them bosses who aren't the best doesn't appear sound.

Those bosses selected should have most, if not all, of the following qualifications:
- Has shown a willingness to try new ideas
- Has an outstanding record of past operating achievements
- Has demonstrated the ability to delegate effectively
- Should be firm in his or her beliefs, yet not inflexible
- Should be known to have high work standards and high values
- Should have demonstrated the ability to effectively develop subordinates
- Has demonstrated possession of a high energy level
- Should have confidence in his or her own ability
- Should have demonstrated courage by showing willingness to take risks where required.

Once selected, the bosses too should be exposed to an orientation seminar that has these objectives:

- To pass along what is known — from social science research and business research — about the process and problems of growth and development of young people.
- To guide and accustom the bosses to think about the kinds of work assignments which will facilitate the growth in management ability of their newly hired recruits.
- To focus attention on the problems surrounding the process of appraisal of managerial ability.

Role Model Bosses

My experience leads me to believe that only by explicitly communicating to new hires that they must develop themselves and by placing them under well-prepared role-model bosses who thoroughly understand their responsibilities, can we hope that management development succeeds.

Such tandem arrangements should produce not only the base of understanding of this development philosophy but managerial per-

formance results usually within a year to 18 months.

Once understood and thoroughly engrained in the fabric of the development process, it is just a question of time until the entire organization is operating in such a manner.

We no longer can afford the luxury of highly structured training courses to which people are "sent," zealously hawked and guarded by training specialists and believed in as the answer to developing managers. The shift must be made to line managers, thoroughly prepared for their role, and oriented toward meaningful work assignments with significant responsibilities.

John Gardner, previously Secretary of HEW and Ex-Chairman of Common Cause says: *"For the self-renewing man, the development of his own potentialities and the process of self-discovery never ends. It is a sad but unarguable fact that most human beings go through their lives only partially aware of the full range of their abilities.*

"The development of abilities is at least in part of a dialogue between the individual and his environment. If he has it to give and the environment demands it, the ability will develop. Any small boy with real ability to wield his fists is likely to discover that ability fairly early. The little girl with the gift for charming grownups will have no trouble discovering that talent. But most abilities are not so readily evoked by the common circumstances of life.

"Most of us have potentialities that have never been developed simply because the circumstances of our lives never called them forth."[2]

The management development job is to call them forth. The best boss is one who understands what really excites newly hired management people — what motivates them. He knows that working people get satisfaction only if they have a chance to achieve something, if they get recognition for their achievements (task-centered not human relations centered), if they get real responsibility, if they are given opportunities to move on to more difficult or rigorous tasks and if they are constantly given opportunities to learn new things. Only these will build a real commitment to development.

We've spent far too much time, attention and money making development a comfortable process. Let's now begin to really focus on the philosophy that all development is self-development. Remember you can't develop another person. You can only set the conditions for it to happen. If they don't, we can't afford to prop them up.

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Roy W. Walters spent more than 25 years in line and staff positions in the Bell Telephone system. In 1960 he was director of Employment and Development at AT&T. In that position he was responsible for designing and directing the Bell System effort to recruit and develop 3500 college graduates a year. There he became known as a leading developer of new philosophies, programs and methods for effective utilization of human resources. While at AT&T he was responsible for the first empirical research into application of Job Enrichment. In 1967 he established his own consulting firm which is recognized as a leader in the field of assisting organizations in the recruiting and development of talent from all sources and in redesigning work and work systems so that employees can perform at their optimum level of ability.

Managers and leaders: Are they different?

Abraham Zaleznik

A bureaucratic society which breeds managers may stifle young leaders who need mentors and emotional interchange to develop

Most societies, and that includes business organizations, are caught between two conflicting needs: one, for managers to maintain the balance of operations, and one for leaders to create new approaches and imagine new areas to explore. One might well ask why there is a conflict. Cannot both managers and leaders exist in the same society, or even better, cannot one person be both a manager and a leader? The author of this article does not say that is impossible but suggests that because leaders and managers are basically different types of people, the conditions favorable to the growth of one may be inimical to the other. Exploring the world views of managers and leaders, the author illustrates, using Alfred P. Sloan and Edwin Land among others as examples, that managers and leaders have different attitudes toward their goals, careers, relations with others, and themselves. And tracing their different lines of development, the author shows how leaders are of a psychologically different type than managers; their development depends on their forming a one-to-one relationship with a mentor.

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Illustration by Hans-Georg Rauch

What is the ideal way to develop leadership? Every society provides its own answer to this question, and each, in groping for answers, defines its deepest concerns about the purposes, distributions, and uses of power. Business has contributed its answer to the leadership question by evolving a new breed called the manager. Simultaneously, business has established a new power ethic that favors collective over individual leadership, the cult of the group over that of personality. While ensuring the competence, control, and the balance of power relations among groups with the potential for rivalry, managerial leadership unfortunately does not necessarily ensure imagination, creativity, or ethical behavior in guiding the destinies of corporate enterprises.

Leadership inevitably requires using power to influence the thoughts and actions of other people. Power in the hands of an individual entails human risks: first, the risk of equating power with the ability to get immediate results; second, the risk of ignoring the many different ways people can legitimately accumulate power; and third, the risk of losing self-control in the desire for power. The need to hedge these risks accounts in part for the development of collective leadership and the managerial ethic. Consequently, an inherent conservatism dominates the culture of large organizations.

Out of this conservatism and inertia organizations provide succession to power through the development of managers rather than individual leaders. And the irony of the managerial ethic is that it

fosters a bureaucratic culture in business, supposedly the last bastion protecting us from the encroachments and controls of bureaucracy in government and education. Perhaps the risks associated with power in the hands of an individual may be necessary ones for business to take if organizations are to break free of their inertia and bureaucratic conservatism.

Manager vs. leader personality

Managers and leaders differ fundamentally in their world views. The dimensions for assessing these differences include managers' and leaders' orientations toward their goals, their work, their human relations, and their selves.

Attitudes toward goals

Managers tend to adopt impersonal, if not passive, attitudes toward goals. Managerial goals arise out of necessities rather than desires, and, therefore, are deeply embedded in the history and culture of the organization. [Leaders]They are active instead of reactive, shaping ideas instead of responding to them. Leaders adopt a personal and active attitude toward goals. The influence a leader exerts in altering moods, evoking images and expectations, and in establishing specific desires and objectives determines the direction a business takes. The net result of this influence is to change the way people think about what is desirable, possible, and necessary.

Conceptions of work

What do managers and leaders do? What is the nature of their respective work?

Leaders and managers differ in their conceptions Managers tend to view work as an enabling process involving some combination of people and ideas interacting to establish strategies and make decisions. Managers help the process along by a range of skills, including calculating the interests in opposition, staging and timing the surfacing of controversial issues, and reducing tensions. In this enabling process, managers appear flexible in the use of tactics: they negotiate and bargain, on the one hand, and use rewards and punishments, and other forms of coercion, on the other. Machiavelli wrote for managers and not necessarily for leaders.

What about leaders, what do they do? Where managers act to limit choices, leaders work in the opposite direction, to develop fresh approaches to long-standing problems and to open issues for new options.

The closest one can get to a product apart from the artist is the ideas that occupy, indeed at times obsess, the leader's mental life. To be effective, however, the leader needs to project his ideas into images that excite people, and only then develop choices that give the projected images substance. Consequently, leaders create excitement in work.

Leaders work from high-risk positions, indeed often are temperamentally disposed to seek out risk and danger, especially where opportunity and reward appear high. From my observations, why one individual seeks risks while another approaches problems conservatively depends more on his or her personality and less on conscious choice. For some, especially those who become managers, the instinct for survival dominates their need for risk, and their ability to tolerate mundane, practical work assists their survival. The same cannot be said for leaders who sometimes react to mundane work as to an affliction.

Relations with others

Managers prefer to work with people; they avoid solitary activity because it makes them anxious. Several years ago, I directed studies on the psychological aspects of career. The need to seek out others with whom to work and collaborate seemed to stand out as important characterstics of managers.

two themes that clarify managerial attitudes toward human relations. The first, as I have suggested, is to seek out activity with other people (i.e. the football team), and the second is to maintain a low level of emotional involvement in these relationships.

These two themes may seem paradoxical, but their coexistence supports what a manager does, including reconciling differences, seeking compromises, and establishing a balance of power. A further idea demonstrated
is that managers may lack empathy, or the capacity to sense intuitively the thoughts and feelings of others.

Empathy is not simply a matter of paying attention to other people. It is also the capacity to take in emotional signals and to make them mean something in a relationship with an individual. People who describe another person as "deeply affected" with "intense desire," as capable of feeling "crestfallen" and as one who can "vow to himself," would seem to have an inner perceptiveness that they can use in their relationships with others.

Managers relate to people according to the role they play in a sequence of events or in a decision-making *process*, while leaders, who are concerned with ideas, relate in more intuitive and empathetic ways. The manager's orientation to people, as actors in a sequence of events, deflects his or her attention away from the substance of people's concerns and toward their roles in a process. The distinction is simply between a manager's attention to *how* things get done and a leader's to *what* the events and decisions mean to participants.

In recent years, managers have taken over from game theory the notion that decision-making events can be one of two types: the win-lose situation (or zero-sum game) or the win-win situation in which everybody in the action comes out ahead. As part of the process of reconciling differences among people and maintaining balances of power, managers strive to convert win-lose into win-win situations.

As an illustration, take the decision of how to allocate capital resources among operating divisions in a large, decentralized organization. On the face of it, the dollars available for distribution are limited at any given time. Presumably, therefore, the more one division gets, the less is available for other divisions.

Managers tend to view this situation (as it affects human relations) as a conversion issue: how to make what seems like a win-lose problem into a win-win problem. Several solutions to this situation come to mind. First, the manager focuses others' attention on procedure and not on substance. Here the actors become engrossed in the bigger problem of *how* to make decisions, not *what* decisions to make. Once committed to the bigger problem, the actors have to support the outcome since they were involved in formulating decision rules. Because the actors believe in the rules they formulated, they will accept present losses in the expectation that next time they will win.

Second, the manager communicates to his subordinates indirectly, using "signals" instead of "messages." A signal has a number of possible implicit positions in it while a message clearly states a position. Signals are inconclusive and subject to reinterpretation should people become upset and angry, while messages involve the direct consequence that some people will indeed not like what they hear. The nature of messages heightens emotional response, and, as I have indicated, emotionally makes managers anxious. With signals, the question of who wins and who loses often becomes obscured.

Third, the manager plays for time. Managers seem to recognize that with the passage of time and the delay of major decisions, compromises emerge that take the sting out of win-lose situations; and the original "game" will be superseded by additional ones. Therefore, compromises may mean that one wins and loses simultaneously, depending on which of the games one evaluates.

There are undoubtedly many other tactical moves managers use to change human situations from win-lose to win-win. But the point to be made is that such tactics focus on the decision-making process itself and interest managers rather than leaders. The interest in tactics involves costs as well as benefits, including making organizations fatter in bureaucratic and political intrigue and leaner in direct, hard activity and warm human relationships. Consequently, one often hears subordinates characterize managers as inscrutable, detached, and manipulative. These adjectives arise from the subordinates' perception that they are linked together in a process whose purpose, beyond simply making decisions, is to maintain a controlled as well as rational and equitable structure. These adjectives suggest that managers need order in the face of the potential chaos that many fear in human relationships.

In contrast, one often hears leaders referred to in adjectives rich in emotional content. Leaders attract strong feelings of identity and difference, or of love and hate. Human relations in leader-dominated structures often appear turbulent, intense, and at times even disorganzied. Such an atmosphere intensifies individual motivation and often produces unanticipated outcomes. Does this intense motivation lead to innovation and high performance, or does it represent wasted energy?

Senses of self

A sense of belonging or of being separate has a practical significance for the kinds of investments managers and leaders make in their careers. Managers see themselves as conservators and regulators of an existing order of affairs with which they personally identify and from which they gain rewards. Perpetuating and strengthening existing institutions enhances a manager's sense of self-worth: he or she is performing in a role that harmonizes with the ideals of duty and responsibility. William James had this harmony in mind—this sense of self as flowing easily to and from the outer world—in defining a once-born personality. If one feels oneself as a member of institutions, contributing to their well-being,

12. William James, *Varieties of Religious Experience* (New York: Mentor Books, 1958).

then one fulfills a mission in life and feels rewarded for having measured up to ideals. This reward transcends material gains and answers the more fundamental desire for personal integrity which is achieved by identifying with existing institutions.

Leaders tend to be twice-born personalities, people who feel separate from their environment, including other people. They may work in organizations, but they never belong to them. Their sense of who they are does not depend upon memberships, work roles, or other social indicators of identity. What seems to follow from this idea about separateness is some theoretical basis for explaining why certain individuals search out opportunities for change. The methods to bring about change may be technological, political, or ideological, but the object is the same: to profoundly alter human, economic, and political relationships.

In considering the development of leadership, we have to examine two different courses of life history: (1) development through socialization, which prepares the individual to guide institutions and to maintain the existing balance of social relations; and (2) development through personal mastery, which impels an individual to struggle for psychological and social change. Society produces its managerial talent through the first line of development, while through the second leaders emerge.

Development of leadership

The development of every person begins in the family. Each person experiences the traumas associated with separating from his or her parents, as well as the pain that follows such frustration. In the same vein, all individuals face the difficulties of achieving self-regulation and self-control. But for some, perhaps a majority, the fortunes of childhood provide adequate gratifications and sufficient opportunities to find substitutes for rewards no longer available. Such individuals, the "once-borns," make moderate identifications with parents and find a harmony between what they expect and what they are able to realize from life.

But suppose the pains of separation are amplified by a combination of parental demands and the individual's needs to the degree that a sense of isolation, of being special, and of wariness disrupts the bonds that attach children to parents and other authority figures? Under such conditions, and given a special aptitude, the origins of which remain mysterious, the person becomes deeply involved in his or her inner world at the expense of interest in the outer world. For such a person, self-esteem no longer depends solely upon positive attachments and real rewards. A form a self-reliance takes hold along with expectations of performance and achievement, and perhaps even the desire to do great works.

Such self-perceptions can come to nothing if the individual's talents are negligible. Even with strong talents, there are no guarantees that achievement will follow, let alone that the end result will be for good rather than evil. Other factors enter into development. For one thing, leaders are like artists and other gifted people who often struggle with neuroses; their ability to function varies considerably even over the short run, and some potential leaders may lose the struggle altogether. Also, beyond early childhood, the patterns of development that affect managers and leaders involve the selective influence of particular people. Just as they appear flexible and evenly distributed in the types of talents available for development, managers form moderate and widely distributed attachments. Leaders, on the other hand, establish, and also break off, intensive one-to-one relationships.

It is a common observation that people with great talents are often only indifferent students.
         The reason for mediocrity is obviously not the absence of ability. It may result, instead, from self-absorption and the inability to pay attention to the ordinary tasks at hand. The only sure way an individual can interrupt reverie-like preoccupation and self-absorption is to form a deep attachment to a great teacher or other benevolent person who understands and has the ability to communicate with the gifted individual.

Whether gifted individuals find what they need in one-to-one relationships depends on the availability of sensitive and intuitive mentors who have a vocation in cultivating talent. Fortunately, when the generations do meet and the self-selections occur, we learn more about how to develop leaders and how talented people of different generations influence each other.

While apparently destined for a mediocre career, people who form important one-to-one relationships are able to accelerate and intensify their development through an apprenticeship. The back-

ground for such apprenticeships, or the psychological readiness of an individual to benefit from an intensive relationship, depends upon some experience in life that forces the individual to turn inward. Mentors take risks with people. They bet initially on talent they perceive in younger people. Mentors also risk emotional involvement in working closely with their juniors. The risks do not always pay off, but the willingness to take them appears crucial in developing leaders.

Can organizations develop leaders?

The examples I have given of how leaders develop suggest the importance of personal influence and the one-to-one relationship. For organizations to encourage consciously the development of leaders as compared with managers would mean developing one-to-one relationships between junior and senior executives and, more important, fostering a culture of individualism and possibly elitism. The elitism arises out of the desire to identify talent and other qualities suggestive of the ability to lead and not simply to manage.

The Jewel Companies Inc. enjoy a reputation for developing talented people. The chairman and chief executive officer, Donald S. Perkins, is perhaps a good example of a person brought along through the mentor approach. Franklin J. Lunding, who was Perkins's mentor, expressed the philosophy of taking risks with young people this way:

"Young people today want in on the action. They don't want to sit around for six months trimming lettuce." [16]

This statement runs counter to the culture that attaches primary importance to slow progression based on experience and proved competence. It is a high-risk philosophy, one that requires time for the attachment between senior and junior people to grow and be meaningful, and one that is bound to produce more failures than successes.

The elitism is an especially sensitive issue. At Jewel the MBA degree symbolized the elite. Lunding attracted Perkins to Jewel at a time when business school graduates had little interest in retailing in general, and food distribution in particular. Yet the elitism seemed to pay off: not only did Perkins become the president at age 37, but also under the leadership of young executives recruited into Jewel with the promise of opportunity for growth and advancement, Jewel managed to diversify into discount and drug chains and still remain strong in food retailing. By assigning each recruit to a vice president who acted as sponsor, Jewel evidently tried to build a structure around the mentor approach to developing leaders. To counteract the elitism implied in such an approach, the company also introduced an "equalizer" in what Perkins described as "the first assistant philosophy." Perkins stated:

"Being a good first assistant means that each management person thinks of himself not as the order-giving, domineering boss, but as the first assistant to those who 'report' to him in a more typical organizational sense. Thus we mentally turn our organizational charts upside-down and challenge ourselves to seek ways in which we can lead . . . by helping . . . by teaching . . . by listening . . . and by managing in the true democratic sense . . . that is, with the consent of the managed. Thus the satisfactions of leadership come from helping others to get things done and changed—and not from getting credit for doing and changing things ourselves." [17]

While this statement would seem to be more egalitarian than elitist, it does reinforce a youth-oriented culture since it defines the senior officer's job as primarily helping the junior person.

A myth about how people learn and develop that seems to have taken hold in the American culture also dominates thinking in business. The myth is that people learn best from their peers. Supposedly, the threat of evaluation and even humiliation recedes in peer relations because of the tendency for mutual identification and the social restraints on authoritarian behavior among equals. Peer training in organizations occurs in various forms. The use, for example, of task forces made up of peers from several interested occupational groups (sales, production, research, and finance) supposedly removes the restraints of authority on the individual's willingness to assert and exchange ideas. As a result, so the theory goes, people interact more freely, listen more objectively to criticism and other points of view and, finally, learn from this healthy interchange.

16. "Jewel Lets Young Men Make Mistakes," *Business Week*, January 17, 1970, p. 90.

17. "What Makes Jewel Shine so Bright," *Progressive Grocer*, September, 1973, p. 76.

Another application of peer training exists in some large corporations, such as Philips, N.V. in Holland, where organization structure is built on the principle of joint responsibility of two peers, one representing the commercial end of the business and the other the technical. Formally, both hold equal responsibility for geographic operations or product groups, as the case may be. As a practical matter, it may turn out that one or the other of the peers dominates the management. Nevertheless, the main interaction is between two or more equals.

The principal question I would raise about such arrangements is whether they perpetuate the managerial orientation, and preclude the formation of one-to-one relationships between senior people and potential leaders.

Aware of the possible stifling effects of peer relationships on aggressiveness and individual initiative, another company, much smaller than Philips, utilizes joint responsibility of peers for operating units, with one important difference. The chief executive of this company encourages competition and rivalry among peers, ultimately appointing the one who comes out on top for increased responsibility. These hybrid arrangements produce some unintended consequences that can be disastrous. There is no easy way to limit rivalry. Instead, it permeates all levels of the operation and opens the way for the formation of cliques in an atmosphere of intrigue.

A large, integrated oil company has accepted the importance of developing leaders through the direct influence of senior on junior executives. One chairman and chief executive officer regularly selected one talented university graduate whom he appointed his special assistant, and with whom he would work closely for a year. At the end of the year, the junior executive would become available for assignment to one of the operating divisions, where he would be assigned to a responsible post rather than a training position. The mentor relationship had acquainted the junior executive firsthand with the use of power, and with the important antidotes to the power disease called *hubris*—performance and integrity.

Working in one-to-one relationships, where there is a formal and recognized difference in the power of the actors, takes a great deal of tolerance for emotional interchange. This interchange, inevitable in close working arrangements, probably accounts for the reluctance of many executives to become involved in such relationships. *Fortune* carried an interesting story on the departure of a key executive,

John W. Hanley, from the top management of Procter & Gamble, for the chief executive officer position at Monsanto.[18] According to this account, the chief executive and chairman of P&G passed over Hanley for appointment to the presidency and named another executive vice president to this post instead.

The chairman evidently felt he could not work well with Hanley who, by his own acknowledgement, was aggressive, eager to experiment and change practices, and constantly challenged his superior. A chief executive officer naturally has the right to select people with whom he feels congenial. But I wonder whether a greater capacity on the part of senior officers to tolerate the competitive impulses and behavior of their subordinates might not be healthy for corporations. At least a greater tolerance for interchange would not favor the managerial team player at the expense of the individual who might become a leader.

I am constantly surprised at the frequency with which chief executives feel threatened by open challenges to their ideas, as though the source of their authority, rather than their specific ideas, were at issue. In one case a chief executive officer, who was troubled by the aggressiveness and sometimes outright rudeness of one of his talented vice presidents, used various indirect methods such as group meetings and hints from outside directors to avoid dealing with his subordinate. I advised the executive to deal head-on with what irritated him. I suggested that by direct, face-to-face confrontation, both he and his subordinate would learn to validate the distinction between the authority to be preserved and the issues to be debated.

To confront is also to tolerate aggressive interchange, and has the net effect of stripping away the veils of ambiguity and signaling so characteristic of managerial cultures, as well as encouraging the emotional relationship leaders need if they are to survive.

18 "Jack Hanley Got There by Selling Harder," *Fortune*, November, 1976.